Chapter 1 Troubleshooting

Overview

This chapter covers troubleshooting problems and helpful hints to ensure proper operation of Backup Director software.

Contents

NLM Hang Conditions

This section provides detailed instructions on what to do when an NLM process hangs on a server (the screen locks at the server console).

Sections include:

- What to do First
- Server Tuning
- NetWare Modules (CLIBs, TSAs, LAN Drivers)
- Hardware Issues

What to Do First

If a backup or restore process hangs, perform one or more of the following

> Check for System Messages that may have been written just prior to the hang to see what process was running that may have contributed to the hang situation.

> Verify the File History Databases for each protected volume using Resource Manager and selecting the *Verify History Database(s)* option.

> Check the backup device for lit LEDs and refer to the backup device's manual for LED explanations and error code conditions.

> If, during a backup, a particular volume is suspected of causing the hang, *deactivate* the volume on the Protected Resource List. If the backup completes on the next automatic rotation, the hang may be caused by an environmental problem on the (deactivated) volume.

Freeing an NLM Process

Unloading the NLM that is hung may free up the hung process. Powering off a backup device to free up a hung NLM process may abend the server and with some backup devices, the server may still have to be downed and rebooted to re-establish synchronous negotiation. It is recommended to wait until a convenient time, then down the server using the “DOWN” command.

Servers with more than 16MB of RAM

A server with more than 16MB of RAM and lower end MCA and ISA SCSI cards such as an Adaptec 1540 or 1640, or a BusLogic 540, can cause NLMs to hang. Within NetWare, ISA SCSI cards placed in EISA-bus PCs cannot address memory above 16 MB.

In addition to using the statement “LOAD AHA1542.DSK ABOVE16=Y” (for an Adaptec 1542 host adapter for example), Palindrome has developed an additional SCSI interface driver named PALSDRV.NLM. When the switch “LOAD PALSDRV ABOVE16MEG” is used, the host adapter can access memory above 16MB.

See also: the *Installation Guide* for information on PALSDRV.

> **NOTE:** If PALSDRV is currently loaded into server memory (run "MODULES" at the server console prompt to determine if it is loaded), unload it and reload it using the statement “LOAD PALSDRV ABOVE16MEG”.

Use Current NetWare Modules

It is critical that all servers have the proper NetWare modules loaded. Without the proper versions of CLIB, STREAMS, TLI, IPXS, SPXS, TSAs, LAN drivers (and possibly others), the server may hang and overall network performance will be impacted.

See the “Server Tuning” section of the *Installation Guide* for a description of parameters to set on the server and for information on determining NetWare modules (and versions) that will optimize performance.

Hardware Issues

Things to Check First

Unsupported hardware is a prime source of NLM hang problems. The following items should be reviewed:

- The SCSI host adapter, backup device (and device firmware), and media must be supported by Palindrome and by the installed NetWare version. All Palindrome supported backup devices and firmware must be able to interpret SCSI-2 commands.

If a backup device correctly handles some backup and restore commands but not others (particularly session locates), it may indicate a device needing repair or that the device is set to SCSI-1 mode and cannot interpret some SCSI-2 commands. System Messages will usually contain a “sense key: illegal command” notation reflecting this condition.

- Be sure the SCSI bus is properly terminated.
- Be sure the backup device is supported.
- Be sure the backup device heads are clean (run a cleaning cartridge through the backup device per manufacturer's recommendations).
- Be sure the backup media is a Palindrome recommended data grade brand.

For
Download (from the Palindrome BBS)

Backup
CDL40.ASC
Device
TSTDRVR.ASC
Media
APRVMED.ASC

To view information about the SCSI host adapter and the model and firmware version of the backup device, use Device Manager to highlight the device and detail information will appear in a table **or** (if the device has not already been scanned) use Device Manager to “Scan for Devices”.

Perform diagnostic tests

If it is suspected that the backup device is causing the server to hang, use Device Manager and select *Operations/Test Device* to perform diagnostic tests on the backup device.

Be sure the backup device is clean and perform the test on at least two different media. “Print screen” the results in case help is needed from Palindrome Technical Support.

See also: “Read/Write Errors Threshold” in Chapter 11 of the *Administrator's Guide.*

If the media is suspect

If the media is suspect, use Media Manager and select the *Media/Verify* option to verify it. If the media fails the verify, perform a FORGET operation on the media. If the media passes, but with a high soft error percentage, perform a RETIRE operation.

Change Hardware

If the hardware and drivers are supported and tests indicate media related failures, check for possible interrupt, I/O, and DMA conflicts with other adapters in the server. If this does not resolve the problem, consider swapping the hardware components, beginning with the backup device, followed by the SCSI cable, then the host adapter. Also try moving the host adapter card (if not an embedded SCSI controller)

to another slot and retry the operation.

Database Corruption

If the File History Database is corrupt, the screen on the server console may freeze during a backup process. This usually occurs while updating the File History Database on disk.

Select the suspect volume in Resource Manager and use *Operations/History Database Maintenance* and the *Verify* option to verify database integrity.

If errors are found, try restoring the latest File History Database from media (often the same version of the database that is corrupted on disk is not corrupted on media). If this does not resolve the problem, restore an older version of the volume's File History Database by tagging the volume's “DHnnnn” session on media and retry the operation.

Network Problems

If the backup operation hangs at random times, (not on a specific volume or file) check for:

- Dropped connections (review the NetWare system log).
- Network I/O problems.
- Network broadcast messages issued during the backup operation time frame (set CASTOFF ALL to prevent this in the future).
- PAL_LOG for error messages that may have been issued prior to the hang situation.

File System Errors

File system errors usually appear as a hang on a particular file.

> Identify the filename on which the program is hung by loading “MONITOR” at the server console, choosing the option *Connection Information*, selecting the login user name, and then viewing the filename.

> Try copying the file across the network from one server to another and back (outside of Backup Director) to see if the file copies without corruption. If corruption occurs, this indicates that the corruption is due to a system problem, rather than the result of running a Palindrome process.

> **HINT:** Compress the suspect file and copy it to a different server on the LAN. Decompress it at the target location to check for corruption.

> As a test to see if the “hung” file is the possible cause, eliminate that filename from the backup by using File Manager to locate the file and set the RULES for that file (temporarily) to **EXCLUDE**. If the backup completes successfully, then the particular file may be the problem. Review the file to see if it contains invalid characters or an invalid date/time field. See if there is a pattern between this file and other files that hang during backup (common extensions or similar). Correct any invalid information.

> It is possible that the file resides on a bad disk sector. Try copying the file to another location on disk. Ensure that the file does not have an illegal (reserved words) DOS file name. Files such as CON* or LPT1* cause hangs.

If problems persist...

Please have the following items ready to fax to Palindrome Technical Support:

- PALSDUMP output (PALSDUMP.NLM is on the last installation diskette in the \TOOLS directory).

- Completed Server Configuration sheets (SERVCFG.ZIP is available from the Palindrome BBS). Hardware information is particularly important. There is no need to fill out redundant information in the server configuration sheets that have already been provided in the PALSDUMP output.

- Printout of System Messages (the PAL_LOG messages file) and the Novell System Log (for the dates and times when the hang occurred).

- Use Device Manager and select *Operations/Test Device* to test backup devices and generate a printout showing the results of write and read tests on hardware (and associated firmware).

Fatal Tape Errors

This section covers common causes of fatal tape errors (including: TD-5, TD-8, TD-10, and TD-11) and some possible solutions to those error codes.

Common Causes

The most common causes of fatal tape errors are:

- Dirty backup devices and dirty or worn tape read/write heads.*
- Bad tapes - unduly worn or defective from manufacturing process.
- Improper tape tensioning.
- Lack of proper SCSI bus termination.
- Unsupported firmware.
- Using video grade or low grade backup media.
- Faulty hardware.

* Exabyte 8200 backup device air filters should be replaced monthly.

Possible Solutions

When TD-5, TD-8, TD-10, or TD-11 errors occur during a backup operation, perform one or more of the following, then retry the operation:

Clean the tape backup device

Refer to the instructions provided with the cleaning kit. Note that the Exabyte 5GB backup devices

monitor the number of passes and will indicate when cleaning is needed. Also, some autoloader devices can automatically perform cleaning operations.

Tension the tape

4mm DAT and 5GB tape backup devices do not tension. For other tape backup devices, insert the tape into the backup device and, using Media Manager, select *Operations/Tension*. Note that it may take a few minutes to complete the tensioning operation.

With the more current backup device designs, using Media Manager and selecting *Operations/Journal* often tensions the media sufficiently and tensioning as a separate operation is not required.

Verify the tape

Use Media Manager and select *Operations/Verify* to verify the readability of all data on the tape. System Messages records the results. The soft error percentage resulting should not exceed the limits indicated in the following table. Please note that the 4mm DDS DAT Write percentage is approximately one half of **one** percent.

Backup Device	**Acceptable Max. Write %**	**Acceptable Max. Read %**
DC		
2.00%		
2.00%		
4mm		
0.55%		
5.00%		
8mm,		
3.00%		
4.00%		
8mm,		
6.00%		
8.00%		
DLT		
3.00%		
3.00%		

If the soft error percentage reported exceeds the acceptable maximum percentage for the backup device, the tape may be marginal. Clean the backup device using an approved cleaning cartridge and retry the operation. If the media still exceeds the above recommended table percentages, “retire” the media using Media Manager and select *Operations/Retire*. The data existing on a retired tape will be re-protected on active tapes, providing the data still exists on the network.

If a fatal tape error occurs while verifying or the tape fails to journal properly, “forget” the tape using Media Manager and selecting *Operations/Forget*. This removes all related media records from the File History Database(s) on disk.

Other Things to Check

If TD-*nn* “type” errors occur repeatedly on several tapes over a short period of time, perform the following:

Firmware

Use Device Manager and select *Scan for Devices* to check the firmware revision of the backup device to

be sure it is included on the Palindrome Supported Device List (download CDL40.ASC from the Palindrome BBS).

Data Grade Tapes

Ensure that Palindrome recommended tapes are being used in the backup device. Use of tapes other than data grade tapes may void any Palindrome warranties! For a list of Palindrome recommended media, download APRVMED.ASC (Approved Media) from the Palindrome BBS.

Proper Termination

Ensure that the SCSI bus is properly terminated.

See also: “SCSI Bus Termination” in the <F14MI>Installation Guide.<F255D>

Optional Troubleshooting Ideas

The following suggestions are optional but would help greatly in troubleshooting tape backup device problems:

> Reseat the SCSI card in the server, reseat the cable from the host adapter to the backup device, and retry the operation.

> If any new hardware has been added to the PC, remove it and retry the operation.

> If new NLMs were recently added to the server, replace them with the prior versions and retry the operation.

> If the backup device is next to a monitor or other electromagnetic source, move it as far away as possible, and retry the operation.

> If possible, see if the tape backup device exhibits the same errors when installed on another server. If the backup device works on another server (with a different host adapter), then the original SCSI host adapter card may need replacing.

> If available, try the backup device with a different (and if possible shorter) SCSI cable. If the symptoms disappear, the cable needs replacing. The total length of the SCSI chain should not exceed 19.8ft (6 meters).

> If possible, substitute an identical backup device (that is working correctly) for the backup device in question. If the substitute backup device works properly, then the original backup device probably needs repairing.

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